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News Release

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Breakthrough in Sterilization Testing Techniques

Aberdeen Proving Ground, MD — The Edgewood Chemical Biological Center (ECBC) has developed a new test method that will allow military and medical communities to better determine how effective current sterilants and decontaminants are. A systematic search for a better sporicidal test resulted in a new standard initiated by Dr. Jose-Luis Sagripanti, Senior Biochemistry Research Advisor at ECBC. The test has been adopted as the new international standard by the American Society for Testing and Materials (ASTM) E 2414-05, Quantitative Sporicidal Three-Step Method (TSM) to Determine Sporicidal Efficacy of Liquids and Vapor or Gases on Contaminated Carrier Surfaces.

The TSM has been used for testing done in connection with the anthrax mail attacks and military operations in Afghanistan and Iraq. The TSM has also been used to evaluate the effectiveness of decontaminant agents and their potential use for the U.S. Department of Defense. In particular the TSM has direct application to test microbicidal agent against the most resistant and dangerous organisms known. Decontaminant agents were subjected to testing for potential use on military equipment returning from the battlefield. Samples were tested on sections of military HUMM vehicles, glass, and protective gas masks.

Carriers used in the Three-Step Method include sections of military HUMM vehicles, glass,

and protective rubber gas masks.
Photo by Jennifer Gaskill

Now that Test Method E 2414 has been approved, it is likely that the applications for TSM will expand to civilian use. “The three-step method has applications for an important commercial segment that needs testing and evaluation of decontaminant, sporicidal and sterilant agents for defense, food processing and medical applications, as well as for bactericidal soaps, lotions, cleaners, paints and many other products for household and commercial use that can involve microbicidal activity,” says Dr. Sagripanti.

According to Dr. Sagripanti, the three-step method outlined in Test Method E 2414 has several advantages over other past and current sporicidal methods. The TSM is:

- *Quantitative*. Efficacy is measured as a number in contrast to growth-no growth.
- *Rapid*. Results are read after overnight incubation, instead of a 30-day wait.
- *Economical*. Used carrier surfaces are inexpensive enough to be disposable.
- *Flexible*. The test is mainly intended to evaluate decontaminating or sporicidal agents, but it can also compare the sensitivity of different microbes or the effect of different surfaces or materials.
- *Environmentally friendly*. Because it is a micro method that uses small volumes, the test produces much less biological waste than other methods.

Currently the U.S. Environmental Protection Agency is conducting an extensive validation of TSM. In the future, ECBC and the Department of Defense would like to pursue TSM as an international standard to assist foreign vendors.

ECBC is the Army's principal research and development center for chemical and biological defense technology, engineering and services. ECBC has achieved major technological advances for national defense, civilian needs and industrial competitiveness, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our Web site at http://www.ecbc.army.mil or call (410) 436-3610.

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